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Brooks et al.

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[54] **SMOKING ARTICLES UTILIZING
ELECTRICAL ENERGY**

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131/194; 128/202.21; 128/203.26; 128/203.27;
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[58] **Field of Search:** 131/329, 194, 273;
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204.21, 203.17, 203.26, 203.27, 204.13, 204.23

[56] **References Cited**

U.S. PATENT DOCUMENTS

1,771,366 7/1930 Wyss et al.
1,968,509 7/1934 Tiffany
2,057,353 10/1936 Whittemore, Jr.
2,104,266 1/1938 McCormick
2,974,669 3/1961 Ellis
3,200,819 8/1965 Gilbert
3,889,690 6/1975 Guarneri
3,918,464 11/1975 Kolodziej
3,943,941 3/1976 Boyd et al. 131/359
4,133,318 1/1979 Gross et al.
4,141,369 2/1979 Burruss
4,164,230 8/1979 Pearlman
4,193,411 3/1980 Faris et al.
4,246,913 1/1981 Ogden et al.
4,303,083 12/1981 Burruss, Jr.
4,523,589 6/1985 Krauser
4,564,748 1/1986 Gupton
4,580,583 4/1986 Green, Jr.

4,708,151 11/1987 Shelar
4,714,082 12/1987 Banerjee et al.
4,735,217 4/1988 Gerth et al.
4,756,318 7/1988 Clearman et al.
4,771,796 9/1988 Myer

FOREIGN PATENT DOCUMENTS

174645 3/1986 European Pat. Off.
186280 7/1986 European Pat. Off.
212234 3/1987 European Pat. Off.
2653133 5/1978 Fed. Rep. of Germany
2704218 8/1978 Fed. Rep. of Germany
3300992 7/1984 Fed. Rep. of Germany
2128256 10/1972 France
48-8231 3/1973 Japan
WO86/02528 5/1986 PCT Int'l Appl.
197946 4/1924 United Kingdom

OTHER PUBLICATIONS

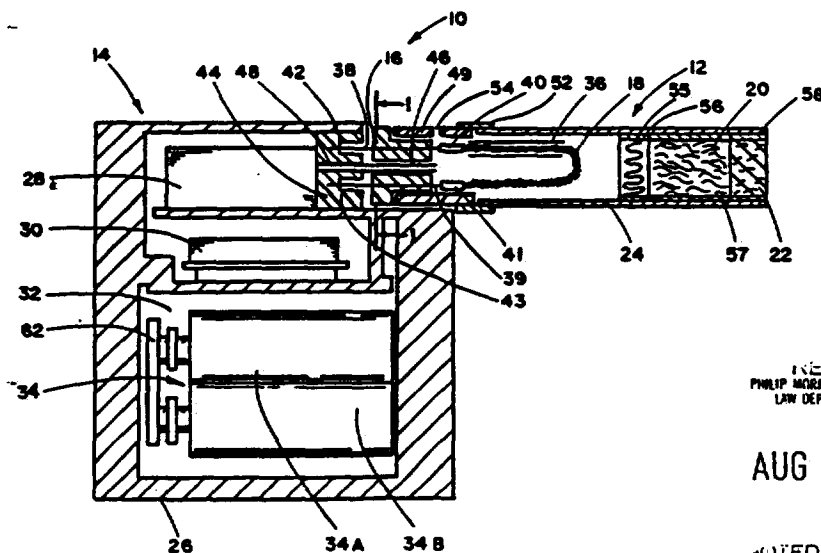
Tobacco and Tobacco Smoke, Wynder et al., pp. 482 and
522 (1967).

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[57] **ABSTRACT**

Smoking articles employ an electrical resistance heating element and an electrical power source to provide a tobacco-flavored smoke or aerosol and other sensations of smoking. The smoking articles advantageously comprise a disposable portion and a reusable controller. The disposable portion, which may be a cigarette, normally includes (i) an air permeable resistance heating element having a surface area greater than $1 \text{ m}^2/\text{g}$, which usually carries an aerosol forming material, and (ii) a charge or roll of tobacco. The reusable controller normally includes a puff-actuated current actuation means, a time-based current regulating means to control the temperature of the heating element, and a battery power supply.

202 Claims, 8 Drawing Sheets



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